

9. The method of claim 8 in which the release layer is either Al or Cr.

10. The method of claim 8 in which the release layer is a low surface energy solid organic polymer.

11. The method of claim 10 in which the low surface energy solid organic polymer is a fluoropolymer.

12. A method for replicating an optical element having a surface relief hologram, comprising:

(a) embossing a relief holographic image having an aspect ratio of at least 10:1 in a dry photohardenable film at room temperature by applying thereto under pressure a stamper containing a reverse relief image of the relief image having an aspect ratio of at least 10:1, wherein the dry photohardenable film is supported by a dimensionally stable, optically transparent substrate;

(b) passing actinic radiation through the transparent substrate and the embossed dry photohardenable film while maintaining embedded contacted between the stamper and the photohardenable film; and

(c) separating the stamper from the film containing the surface relief hologram having the aspect ratio of at least 10:1,

wherein the dry photohardenable film consists essentially of an admixture of 5-50% liquid ethylenically unsaturated monomer or monomers, 0.1-10% initiator system, 25-75% solid polymeric binder or binders, 0-25% plasticizer or plasticizers, and 0-5% other ingredients, wherein the percentages are percents by weight.

13. The method of claim 12, wherein at least one of the monomers contains more than one ethylenically unsaturated group.

14. The method of claim 12, wherein at least one of the monomers contains three ethylenically unsaturated groups.

15. The method of claim 12, wherein at least one of the monomers is a triacrylate or a trimethacrylate of trimethylolpropane or ethoxylated trimethylolpropane.

16. The method of claim 12, wherein the admixture includes:

at least one monomer from the group consisting of trimethylolpropane trimethacrylate and triacrylate ester of ethoxylated trimethylolpropane; and

at least one binder from the group consisting of poly(methyl methacrylate) and poly(vinyl acetate).

17. The method of claim 12, wherein the dry photohardenable film comprises an admixture of:

poly(methyl methacrylate);

poly(vinyl acetate);

trimethylolpropane trimethacrylate;

triacrylate ester of ethoxylated trimethylolpropane;

1,1'-biimidazole, 2,2'-bis[o-chloro-phenyl]-4,4',5,5'-tetraphenyl-;

2-mercapto benzoxazole;

2-(stibyl-4'')-(naphto-1',2',4,5)-1,2,3-triazol-2''-sulfonic acid phenyl ester;

3-phenyl-7-[2'-(4'-N,N-diethylamino-6'-chloro-1',3',5'-triazinylamino)-coumarin];

(2-hydroxy-4-methoxyphenyl) (2-hydroxyphenyl) methanone;

polyoxyethylene (4) lauryl ether;

hydroquinone; and

1,4,4-trimethyl-2,3-diazobicyclo-(3.2.2)-non-2-ene-2,3-dioxide.

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